KHODASEVICH, I.A.; KIRILKIN, G.Ye.; MIKHALENKO, G.S.

Railroad worker with initiative. Put' i put.khoz. 6 no.5:44 '62.
(MIRA 15:4)

1. Nachal'nik Mogilevskoy distantsii Belorusskoy dorogi (for Khodasevich).

(Railroads--Employees)

KIRILLICHEVA, A. V., Dr. Bio Sci — (diss) "Dynamics of the morphological changes in the organs and tissues of rabbits during the exhaution and restoration of the organism and the effect of certain medicinal substances on these processes," Alma-Ata, 1960, 32 pp, 400 cop. (Kazakh State Medical Institute) (KL, 45-60, 123)

L 21990-66 EWT(1)/EWT(m)/EWG(r)/EPF(n)-2/EWG(m)/EWP(t)/EWA(1) IJP(c)

ACCESSION NR: AP5025980 JD/WW/AT UR/0294/65/003/005/0677/0685
533.932.15

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B

AUTHOR: Asinovskiy, E. I.; Kirillin, A. V.

TITLE: Experimental determination of the thermal conductivity coefficient of argon plasma

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 5, 1965, 677-685

TOPIC TAGS: argon, plasma jet, heat conductivity

ABSTRACT: The object of the work was the experimental determination of the coefficient of thermal conductivity of an argon plasma at atmospheric pressure and temperatures of 10,000-13,000 K. The required temperatures were achieved with an electric arc stabilized by a cooled copper wall. Studies were made of the dependence of the potential of the electric field and of the radial temperature distributions on the arc current for different diameters of the stabilizing channel (4, 6, and 8 mm). The source of the plasma jet operated in a stable manner for several hours at specific loads reaching 4.5 kilowatts/cm. The potential of the electric field in the column of the jet was determined by experimental determination of the distribution of the potential along the arc with respect to the cathode. It

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ACCESSION NR: AP5025980

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was found that at temperatures of 10,000-11,000 K, the experimental values of the thermal conductivity are practically independent of the diameter of the channel, and correspond to the theoretical values. At temperatures above 11,000 K, there is a spread of the experimental points according to the diameter, a larger diameter corresponding to more effective thermal conductivity in the central zone of the arc column. It was found that the character of the arc does not depend on the velocity and the direction of flow of the plasma in the stabilizing channel. Values are also obtained for the total radiation coefficient of an argon plasma at temperatures from 10,000 to 13,500 K. By extrapolation of the effective thermal conductivity to zero diameter of the channel, the values of the thermal conductivity correspond to the theoretical. "In conclusion, the authors express their thanks to A. E. Sheyndlin for his direction of the work, to V. M. Batenin, L. M. Biberman, and V. A. Fabricant for their valuable and interesting observations, and to N. I. Rumyantseva for working up the experimental data." Orig. art. has: 8 formulas, 7 figures and 1 table

ASSOCIATION: Nauchno-issledovatel'skiy institut vysokikh temperatur (High Temperature Scientific Research Institute)

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L 21990-66

ACCESSION NR: AP5025980

SUBMITTED: 28May65 ENCL: 00 SUB CODE: 20

NR REF SOV: 007 OTHER: 016

Card 3/3 FV

KIRILLIN, P. N.

Rural electrification

First rural hydroelectric power stations, Mekh.elek.sel'khoz. no. 1, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

1. KIRILLIN, P. N.

2. USSR (600)

4. Hydroelectric power stations

7. Il'ich's light bulb, Mol. kolkh. 20 No. 2, 1953

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

KIRILLIN, V. A.

"Collection of Problems on Engineering Thermodynamics" 1[illegible]

Textbook. Problems on aircraft turbines are given p. 5[illegible].

KIRILLIN, V. A. and A. E. SHEINDLIN.

Sbornik zadach po tekhnicheskoi termodinamike. Dop. v.kachestve uchebn. posobiia dlia vtuzov. Moskva, Gosenergoizdat, 1949. 222 p. diagrs., tables.

(Collection of problems in technical thermodynamics.)

DLC: TJ265.K54

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

KIRILLIN, V. A. and SHEYNDLIN, A. Ye.,

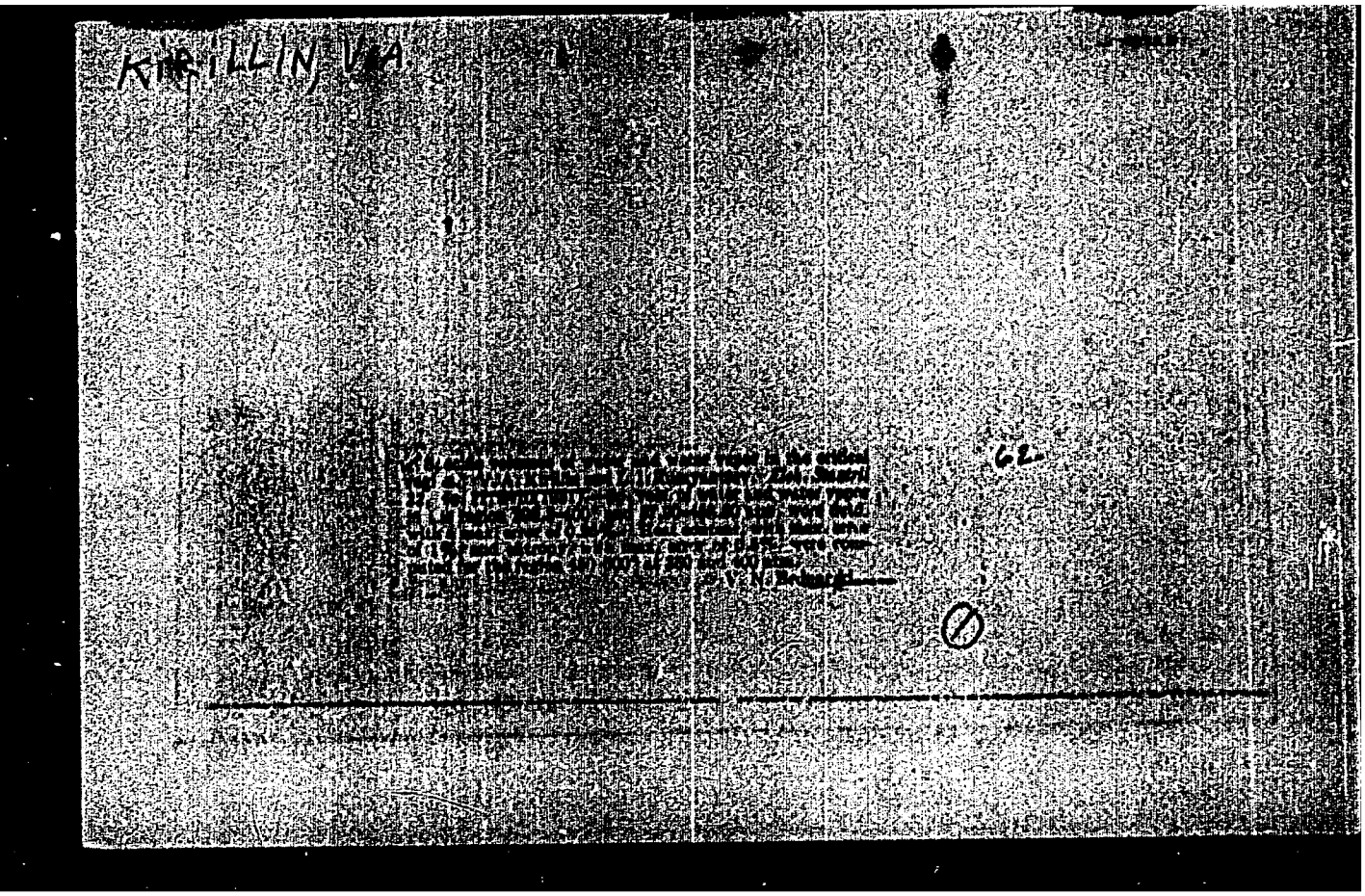
"Fundamentals of Experimental Thermodynamics," State Energetics Publishing House, Moscow, 1950, 312pp.

KIRILLIN, V. A.

"Investigation of the Thermodynamic Properties of Water and Steam in the Field of High Pressures and Temperatures." Sub 27 Apr 51, Moscow Order of Lenin Power Engineering Inst imeni V. M. Molotov.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 2 May 55.



1. MESHKOV, V. V.: IVANOV, A. P.: KIRILLIN, V. A.: GLAZUNOV, A. A.: PANTYUSHIN, V. S.: ZOLOTAREV, T. L.: BABIKOV, M. A.: FABRIKANT, V. A.: ZHDANOV, G. M.: PEREKALIN, M.A.: KOMAR, V. G.: TALITSKIY, A. V.:

2. USSR (600)

4. Kaganov, I. L. 1902-

7. Professor I. L. Kaganov; fifieth birthday anniversary.
Elektrivhestvo, No.11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

KIRILLIN, V.A.

KIRILLIN, V.A.; SHEYNDLIN, A.Ye; KOMAROV, L.P., redaktor; VOROKIN, K.P., tekhnicheskiy redaktor.

[Steam in power engineering] Vodianoi par v energetike. Moskva, Gos. energeticheskoe izd-vo, 1953. 94 p. (MLRA 7:8)
(Steam engineering)

SUSHKOV, Vyacheslav Vladimirovich, 1880-, professor; KIRILLIN, V.A., professor, redaktor.

[Technical thermodynamics] Tekhnicheskaia termodinamika. 5. izd., perer., pod red. V.A.Kirillina. Moskva, Gos. energ. izd-vo, 1953. 336 p.
(MLRA 6:10)
(Thermodynamics)

KIRILLIN, V.A.; PANTYUSHIN, V.S.; SIROTINSKIY, L.I.; BEL'KIND, L.D.; FEDOSEYEV, A.M.; UL'YANOV, S.A.; VENIKOV, V.A.; MARANCHAK, V.M.; ANISIMOVA, N.D.

Professor I.I.Solov'ev. Fiftieth anniversary of his birth. Elektrichestvo no.10:93 O '53. (MLRA 6:10)

(Solov'ev, Ivan Ivanovich, 1903-)

CHILIKIN, M.G.; KIRILLIN, V.A.; POLIVANOV, K.M.; FABRIKANT, V.A.; MILENDER, [redacted], I.L.; IVANOV, A.P.; ZHDANOV, G.M.

Professor V.V.Meshkov. Fiftieth birthday and 25 years of scientific and teaching activity. Elektrichestvo no.1:93 Ja '54. (MLRA 7:2)

(Meshkov, Vladimir Vasil'evich, 1904-)

KIRILLIN, V. A.

USSR/Physics - Thermodynamics, criticism FD-594

Card 1/1 Pub. 153-24/28

Author : Kirillin, V. A., and Rubinshteyn, Ya. M.

Title : Concerning an ignorant article on dynamics

Periodical : Zhur tekh. fiz 24, No. 5, 929-932, 1954

Abstract : Claims that Ye. M Kharitonchik's article "Processes and cycles with decreasing entropy and their significance for natural science and technology" is essentially erroneous and can only confuse the inexperienced reader. This article appeared in the Sbornik trudov po zemledel'cheskoy mekhanike [Symposium of work on agricultureal mechanics], published 1952 under the editorship of Acad. V. A. Zhelegovskiy, of All-Union Academy of Agricultural Sciences imeni V. I. Lenin.

Institution :

Submitted : September 18, 1953

KIRILLIN, V.A.

AID P - 3883

Subject : USSR/Power Eng.

Card 1/1 Pub. 110-a - 4/17

Authors : Kirillin, V. A., Corr. Memb., Academy of Sci., USSR and Zubarev, V. N., Kand. Tech. Sci., Moscow Power Institute

Title : Research on specific volume of water and steam at super high pressure .

Periodical : Teploenergetika, 11, 19-23, N 1955

Abstract : The article describes methods of research done on water and steam volume at 950 atm pressure and 500°C temperature. A table with enthalpy data computed following experiments is included. Two diagrams. Four Russian references, 1950-1953, 2 English, 1931-1933.

KIRILLIN V. A.

USSR/Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical Analysis. Phase Transitions, B-8

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 331

Author: Kirillin, V. A., Sheyndlin, A. Ye., and Shpil'rayn, E. E.

Institution: None

Title: New Tables of Correlated Values for the Enthalpy and Specific Volume of Steam

Original Periodical: Dokl. AN SSSR, 1955, Vol 105, No 3, 472-475; Teploenergetika, 1956, No 1, 16-21

Abstract: On the basis of experimental data collected over the last few years (chiefly at the All-Union Heat and Power Institute and the Moscow Power Institute) tables of correlated values for the enthalpy and specific volume of steam are presented for pressures up to 500 atm (in steps of 50 atm) and for temperatures up to 650° (in steps of 50°); (the existing tables, adopted in 1934, give values for the enthalpy and specific volume up to 300 atm and 550°, the values in the

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USSR/Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical Analysis. Phase Transitions, B-8

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 331

Abstract: region above 450° being obtained by extrapolation). The calculations have been carried out by graphic and numeric methods without the use of any analytical equations of state. The region in which the enthalpy was calculated simultaneously from PVT and c_p data covers the range 300-500 atm and 400-650°; for the range 300-500 [sic] atm and 200-400°, only c_p data are available, while in the range 100-300 atm, 400-650° only PVT data are available. The table for the specific volume has been constructed only on the basis of PVT data; however, the correlation between the values of the enthalpy calculated from these data with the enthalpy values calculated from c_p data serves to insure agreement between the thermodynamic and caloric values in the enthalpy table.

Card 2/2

KIRILLIN, V. A.

LEVIT, Grigoriy Osipovich, inshener; BEL'KIND, L.D., doktor tekhnicheskikh nauk, redaktor; GLAZUNOV, A.A., doktor tekhnicheskikh nauk, redaktor; GOLUBTSOVA, V.A., kandidat tekhnicheskikh nauk, redaktor; ZOLOTAREV, T.L., doktor tekhnicheskikh nauk, redaktor; IZBASH, S.V., doktor tekhnicheskikh nauk, redaktor; KIRILLIN, V.A., redaktor; KONFEDERATOV, I.Ya., doktor tekhnicheskikh nauk, redaktor; PETROV, G.N., doktor tekhnicheskikh nauk, redaktor; SIROTINSKIY, L.I., doktor tekhnicheskikh nauk, redaktor; SOLOV'YEV, I.I., professor, redaktor; STYRIKOVICH, M.A., redaktor; SHNEYBERG, Ya.A., kandidat tekhnicheskikh nauk, redaktor; SHCHEGLYAYEV, A.V., redaktor; ARTIK, I.V., redaktor; FRADKIN, A.M., tekhnicheskiy redaktor

[Outline history of power engineering in the U.S.S.R.] Ocherki po istorii energeticheskoi tekhniki SSSR. Red. komissiia L.D. Bel'kind i dr. Moskva, Gos. energ. izd-vo. No. 3. [Power congresses and conferences] Energeticheskiy s"ezdy i konferentsii. 1956. 98 p. (MLRA 10:4)

1. Moscow. Moskovskiy energeticheskiy institut. 2.Chlen-korrespondent AN SSSR.(for Kirillin, Styrikovich, Shcheglyayev)
(Power engineering--Congresses)

BOSHNYAKOVICH, F.; VUKALOVICH, M.P. [translator], redaktor; KIRILLIN, V.A., [translator], redaktor; RASSKAZOV, D.S., redaktor; SKVORTSOV, I.M., tekhnicheskiy redaktor

[Engineering thermodynamics. Translated from the German] Tekhnicheskaia termodinamika. Perevod s nemetskogo i red. M.P.Vukalovicha i V.A.Kirillina. Moskva, Gos. energ. izd-vo, Pt.2. 1956. 255 p.
(Thermodynamics) (MLRA 9:10)

KIRILLIN, Vladimir Alekseyevich; SHEYNDLIN, Aleksandr Yefimovich; SHPIL'RAYN, E.E., redaktor; VORONIN, K.P., tekhnicheskiy redaktor

[Thermodynamics of solutions] Termodinamika rastvorov. Moskva, Gos. izd-vo, 1956. 272 p. (MLRA 9:7)
(Solutions(Chemistry)) (Thermodynamics)

KIRILLIN, Vladimir Alekseyevich; SHEYNDLIN, Aleksandr Yefimovich; SHPIL'RAYN, Eval'd Emil'yevich; NIKOLAYEV, V.V., red.; MEDVEDEV, L.Ya., tekhn.red.

[Engineering problems in thermodynamics] Zadachnik po tekhnicheskoi termodinamike. Izd.2-oe, perer. Moskva, Gos.energ.izd-vo, 1957. 253 p. (MIRA 11:1)
(Thermodynamics--Problems, exercises, etc.)

KIRILLIN, V.A.

RABINOVICH, Oskar Markovich, professor; KIRILLIN, V.A., retsenzent; MATVEYEVA, Ye.N., tekhnicheskiy redaktor

[Collection of problems in technical thermodynamics] Sbornik zadach po tekhnicheskoy termodinamike. Izd. 3-e, perer. i dop. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 303 p. (MLRA 10:6)

1. Chlen-korrespondent Akademii nauk SSSR (for Kirillin)
(Thermodynamics--Problems, exercises, etc.)

KIRILLIN, V.A.

BADYL'KES, I.S., doktor tekhnicheskikh nauk; BELINSKIY, S.Ya., kandidat tekhnicheskikh nauk; GIMMEL'FARB, M.L., kandidat tekhnicheskikh nauk; KALAFATI, D.D., kandidat tekhnicheskikh nauk; KERTSELLI, L.I., professor; KOVALEV, A.P., doktor tekhnicheskikh nauk; KONFEDERATOV, I.YA., doktor tekhnicheskikh nauk; LAVROV, V.M., doktor tekhnicheskikh nauk; LEBEDEV, P.D., doktor tekhnicheskikh nauk; LUKNITSKIY, V.V., doktor tekhnicheskikh nauk [deceased]; PETUKHOV, B.S., doktor tekhnicheskikh nauk; SATANOVSKIY, A.Ye., kandidat tekhnicheskikh nauk; SEMENENKO, N.A., doktor tekhnicheskikh nauk; SMEL'NITSKIY, S.G., kandidat tekhnicheskikh nauk; SOKOLOV, Ye.Ya., doktor tekhnicheskikh nauk; CHISTYAKOV, S.F., kandidat tekhnicheskikh nauk; SHCHEGLYAYEV, A.V.; BEL'KIND, L.D., doktor tekhnicheskikh nauk, redaktor; GLAZUNOV, A.A., doktor tekhnicheskikh nauk, redaktor; GOLUBTSOVA, V.A., doktor tekhnicheskikh nauk, redaktor; ZOLOTAREV, T.L., doktor tekhnicheskikh nauk, redaktor; IZBASH, S.V., doktor tekhnicheskikh nauk, redaktor; KIRILLIN, V.A., redaktor; MARGULOVA, T.Kh., doktor tekhnicheskikh nauk, redaktor; MESHKOV, V.V., doktor tekhnicheskikh nauk, redaktor; PETROV, G.N., doktor tekhnicheskikh nauk, redaktor; SIROTINSKIY, L.I., doktor tekhnicheskikh nauk, redaktor; STYRIKOVICH, M.A., redaktor; SHNEYBERG, Ya.A., kandidat tekhnicheskikh nauk, redaktor; MATVEYEV, G.A., doktor tekhnicheskikh nauk, redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor

[History of power engineering in the U.S.S.R.; in three volumes] Istoriia energeticheskoy tekhniki SSSR; v trekh tomakh. Moskva, Gos.energ.izd-vo.

(Continued on next card)

BADYL'KES, I.S.---(continued) Card 2.

Vol. 1. [Heat engineering] Teplotekhnika. Avtorskii kollektiv toma Badyl'kes i dr. Red. -sost. toma I.IA.Konfederatov. 1957. 479 p. (MLRA 10:8)

1. Chlen-korrespondent Akademii nauk SSSR (for Shcheglyayev, Kirillin, Styrikovich). 2. Moscow. Moskovskiy energeticheskiy institut

(Heat engineering--History)

KIRILLIN, V.A.

96-4-9/24

AUTHORS: Kirillin, V.A., Corresponding Member of the Ac.Sc.USSR and Ulybin, S.A., Engineer.

TITLE: An experimental investigation into the compressibility of water and water vapour at temperatures close to the critical. (Eksperimental'noye issledovaniye szhimayemosti vody i vodyanogo para pri temperaturakh, blizkikh k kriticheskoy).

PERIODICAL: Teploenergetika, 1958, No.4, pp. 53-54 (USSR).

ABSTRACT: In view of the high accuracy needed in tables of the thermodynamic properties of water and steam, special attention has recently been paid to correlation of caloric and thermal parameters. An attempt was made to calculate the enthalpy of steam from experimental determinations of specific heat and from experimental data on compressibility. Discrepancies in the results were probably due to errors in the experimental data. It appeared most likely that errors were present near to the critical point, where many measurements become unreliable. It was therefore decided to repeat investigations on the compressibility of water and steam at temperatures close to the critical, paying special attention to experimental procedure. This time

Card 1/3 the experimental procedure was modified. It had been

An experimental investigation into the compressibility of water and water vapour at temperatures close to the critical.

assumed that the volume of the differential manometer did not change with pressure, but in fact it does. Care was taken to make accurate temperature measurements. The pressure was measured with the piston-type manometer system of M. K. Zhokhovskiy, calibrated at the All-Union Scientific Research Institute of Standard, Measures and Measuring Instruments. The tests were made on the isotherms 368.82, 400.00 and 410.00°C. over the pressure range of 103.32 - 493.96 atms. Twenty-nine experimental values of specific volume were obtained and are given in Tables 1 - 3. On the isotherm 368.82°C over the entire pressure range used in the present work the specific volume was within 0.2% of the value previously obtained. On the 400.00°C isotherm there is one point which is 0.35% higher than a value obtained by interpolation from the previous work. It is concluded that experimental values of specific volumes of water and steam obtained in the previous work are quite reliable within the limits of accuracy given, except on the 410°C isotherm in the pressure range 450 - 500 atms. Additional data obtained

 in the present work will help in the formulation of more

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An experimental investigation into the compressibility of water and water vapour at temperatures close to the critical.

accurate tables of the thermodynamic properties of water and steam, and in particular will conduce to better agreement between thermal and caloric values. There are 3 tables and 3 Russian references.

ASSOCIATION: Moscow Power Institute. (Moskovskiy Energeticheskiy Institut).

AVAILABLE: Library of Congress.

Card 3/3

SOV/96-58-7-1/22

AUTHOR: Kirillin, V.A., Corresponding Member Acadamy of Science of the USSR

TITLE: International co-operation in the investigation of the thermodynamic properties of steam (O mezhdunarodnom sotrudnichestve v oblasti issledovaniy termodinamicheskikh svoystv vodyanogo para)

PERIODICAL: Teploenergetika, 1958, Vol.5. No.7, (July) pp. 3-6 (USSR)

ABSTRACT: An account is given of the work of the International Conferences on the Properties of Water and Steam, including the 5th London Conference of 1956. The skeleton tables worked out in 1934 are no longer sufficient because higher steam conditions are now coming into use. The 4th Conference drew up a large programme of work, and the progress of it was reviewed at the 5th Conference. The Conference was attended by representatives of science and industry. 26 reports were read, including 7 from the USSR, and are briefly reviewed. New steam tables were presented. A committee was set up to co-ordinate work on steam and met in London in June, 1957. The Soviet delegation made a number of technical visits during their stay in England. The discussions of the Committee are reviewed and its decisions reported. The International Co-ordinating Committee will meet again in Moscow in July of this year. The main subjects

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International co-operation in the investigation of the thermo-dynamic properties of steam. SOV/96-58-7-1/22

for discussion are reviewed. The Academy of Science of the USSR, the Ministry of Electric Power Stations and the Ministry of Higher Education of the USSR are much interested in this work and are giving it considerable help.

1. Steam - Thermodynamic properties

Card 2/2

KIRILLIN, V.A.

21(4) PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

KIRILLIN, V.A.; ULYBIN, S.A., insh.

Experimental investigation of specific volumes of water and water vapor in the region of high temperatures [with summary in English]. Teploenergetika 6 no.1:62-65 Ja '59. (MIRA 12:1)

1. Chlen-korrespondent AN SSSR (for Kirillin). 2. Moskovskiy energeticheskiy institut.
(Water) (Water vapor) (High temperatures)

SOV/96-59-4-13/21

AUTHORS: Kirillin, V.A., Corresponding Member of the Ac.Sc.USSR
Ulybin, S.A., Engineer

TITLE: An Experimental Determination of the Specific Volumes of Heavy Water (Eksperimental'noye opredeleniye udel'nykh ob"yemov tyazheloy vody)

PERIODICAL: Teploenergetika, 1959, 6, Nr 4, pp 67-72 (USSR)

ABSTRACT: Knowledge of the properties of heavy water is required for atomic power engineering but so far these properties have been studied over only a very narrow range of temperature and pressure. The experimental equipment used was the same as had already been used to determine the thermo-dynamic properties of water and steam at high pressures and temperatures and which has previously been described for example, in Teploenergetika, 1958, Nr 4. Heavy water is hygroscopic and is apt to take up ordinary water from the atmosphere, contamination with even 2% of ordinary water would alter the measured value of the specific volume by about 0.2% and, therefore, special precautions had to be taken to prevent such contamination. Care was also taken to avoid contamination from the aluminium containers in which the heavy water is kept.

An Experimental Determination of the Specific Volumes of Heavy Water

Other special corrections that were made are described. As a result of this investigation determinations were made of the specific volume of heavy water over a temperature range from 250-500°C on 11 isotherms at pressures ranging approximately from 100-500 kg/sq cm. A large number of values of specific volume were obtained for both liquid and vapour phases and are given in table 1. A p-v diagram for heavy water for the pressure range of 150-500 kg/sq cm and for specific volumes up to 10 cm^3/g is given in Fig.1. Most of the experimental values relate to the region close to the critical point of the heavy water and to the liquid phase region, in which the greatest difference should be expected between the properties of ordinary and heavy waters. A diagram of pv/RT against 1/v for heavy water at temperatures above 350°C and densities up to 0.25 g/cm^2 is given in Fig.2. The experimental values for specific volume obtained in the present work cannot be compared directly with other published data because the range of the experiments is not paralleled elsewhere. The experimental data obtained

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in the work has been used to determine the saturation pressure of heavy water at temperatures of 300, 350, 360, 369 and 371°C (see table 2). These results are compared with other published data and it is claimed that agreement is good. The presence of a short horizontal section in the diagram on the isotherm at a temperature of 371°C shows that the critical temperature of heavy water is near to 371°C - probably 0.2-0.3°C above this value. This is in good agreement with other published data. Unfortunately, the data obtained in the present work does not uniquely determine the critical pressure, though it is evident that this is approximately 223 kg/cm^2. This is somewhat lower than published values but nevertheless appears to be right. The present work

An Experimental Determination of the Specific Volumes of Heavy Water SOV/96-59-4-13/21

confirms that the critical conditions of heavy water are different from those of ordinary water. There are 3 figures, 2 tables and 5 references of which 2 are Soviet, 2 English and 1 German.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Institute)

Card 4/4

SOV/96-59-8-19/27

AUTHORS: Kirillin, V.A., Corresponding Member of the Academy of Sciences USSR and Ulybin, S.A., Engineer

TITLE: An Experimental Determination of the Specific Volumes of Steam at High Temperatures and Pressures

PERIODICAL: Teploenergetika 1959, Nr 8, pp 71-73 (USSR)

ABSTRACT: A need was felt to determine the specific volumes of steam at temperatures above 500°C. The work now reported was carried out on the rig of the Moscow Power Institute, which was described in a previous article by the same author. The experimental procedure has also been described. The tests were made on isotherms at temperatures of 500, 520, 550, 570, 600 and 620°C. Altogether 70 new experimental values of specific volumes were determined and are tabulated The results were arranged to overlap with previously published work by the same authors, and agreement is good within the overlap. It is concluded that any effect associated with hydrogen formation by interaction between the steam and the equipment was not important. The differences between the present results and those of Holser and Kennedy are, however, much greater. A direct comparison can only

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be made on four isotherms and agreement is best at the higher temperatures. For example, at 620°C the greatest difference is about 0.1% as indicated in Table 2. At lower temperatures the difference is greater; for instance at 500°C and 700 kg/cm^2 it is about 0.5%. At the lower temperatures the new experimental data for specific volumes and the rounded values given by Holser and Kennedy differ systematically by 0.3 to 0.35% at all pressures up to 700 kg/cm^2. Analysis of the experimental procedure and the results indicates that at temperatures of 500 to 600°C the values given in the present work are more reliable than those of Holser and Kennedy. Measurements were also made of the specific volumes of water and steam at a temperature of 388°C. This was necessary because in the previous work by the same author the results on this isotherm were not in good agreement with the results for other temperatures. The tests covered the pressure range of 130 to 500 kg/cm^2; 10 new experimental values for specific volumes were obtained and are given in Table 1.

An Experimental Determination of the Specific Volumes of Steam at High Temperatures and Pressures

There is a systematic difference of 0.8% between these values and the previously published results, the former being somewhat higher. It is considered that the new values for specific volumes at 388°C are the more accurate. There are 2 Tables and 4 references, 3 of which are Soviet and 1 English.

ASSOCIATION: Moskovskiy Energeticheskiy Institut (The Moscow Power Institute)

SOV/96-59-9-1/22

AUTHORS: Kirillin, V.A. (Corresponding Member of Ac.Sc. USSR), and Ulybin, S.A. (Engineer)

TITLE: Analysis of the Accuracy of the Experimental Values of Specific Volumes of Water and Steam Obtained in the Moscow Power Institute, with Reference to the Unified Tables

PERIODICAL: Teploenergetika, 1959, Nr 9, pp 3-7 (USSR)

ABSTRACT: At the 1958 Moscow meeting of the co-ordinating committee of the International Conference on the properties of steam, attention was drawn to the need for a careful analysis of available experimental data on the thermo-dynamic properties of water and steam, to ensure that the most reliable experimental data is used in drawing up the unified international steam tables. Therefore, an analysis was made of the experimental data on specific volumes of water and steam obtained in the Moscow Power Institute during the period 1950 to 1959. This article briefly describes the methods and results of this analysis. The accuracy of the experimental data on specific volumes was analysed both by comparing the data of different investigators and by consideration of the

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Analysis of the Accuracy of the Experimental Values of Specific Volumes of Water and Steam Obtained in the Moscow Power Institute, with Reference to the Unified Tables

differences between experimental values and interpolated curves based on extensive experimental material. The differences between experimental values and interpolated curves were analysed by three different methods developed respectively by the Moscow Power Institute, the All-Union Thermo-Technical Institute and the Odessa Institute of Marine Engineers. The first two of these methods are graphical and they are briefly described. Some slight inaccuracy may be introduced by the absence of mathematical treatment, particularly where the results of different investigators are not in good agreement. From this point of view the graphical-analytical method of the Odessa Marine Engineers Institute is an improvement, and it is briefly explained. Experimental values were considered sufficiently accurate and reliable when they differed from the interpolation curves by not more than 0.3%. The results analysed were those published by Kirillin, Rumyantsev, Zubarev, and others, as noted in literature references (2) to (12). It is explained, with reasons, which of the results are considered reliable and

which unreliable. The results of the analysis of experimental values of specific volumes are given in Tables 1 and 2. Table 1 includes all the values that are considered reliable: Table 2 gives the values of specific volume which are considered insufficiently reliable and which should be excluded from further consideration. In all cases the specific volumes are rounded off to the nearest four significant figures. There are 2 tables and 13 references, of which 12 are Soviet and 1 English.

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21.1700, 24.5300 SOV/96-59-12-14/20

AUTHORS: Kirillin, V. A., Corresponding Member Academy of Sciences USSR, and Ulybin, S. A., Engineer

TITLE: The Thermo-Dynamic Properties of Ordinary and Heavy Water

PERIODICAL: Teploenergetika, 1959, Nr 12, pp 77-80 (USSR)

ABSTRACT: As the thermo-dynamic properties of heavy water have not been sufficiently studied, calculations involving its use are commonly based on tables of the thermo-dynamic properties of ordinary water. Corrections are made for the difference in molecular weight, it being tacitly assumed that the thermo-dynamic properties of ordinary and heavy water are comparable. This is considered permissible because their critical parameters are similar and only small differences have been observed at points remote from the critical region. Abundant experimental material is available on the vapour pressure of heavy water for temperatures below 250°C, and the pressure/temperature relationship is probably sufficiently understood up to the critical region. At temperatures below 225°C the saturated vapour pressure of ordinary

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The Thermo-Dynamic Properties of Ordinary and Heavy Water

water is higher than that of heavy water, for example at 50°C the saturated vapour pressure of ordinary water is 0.126 kg/cm^2 and that of heavy water 0.11 kg/cm^2. At about 225°C the vapour pressures of both materials are the same. At higher temperatures the vapour pressure of heavy water is greater than that of ordinary water, and at 370°C the difference is almost 4 kg/cm^2. The critical temperature of heavy water is 2.5°C lower than that of ordinary water and the critical pressure is almost 3 kg/cm^2 less. The relationship between the critical volumes of ordinary and heavy water may be obtained from the data plotted in Fig 1. American and German published data indicates that the critical volume of heavy water related to a mole is much less than that of ordinary water; these data are evidently erroneous. Work published by the present authors in Teploenergetika 1959, Nr 4, gives a specific critical volume of 2955 cm^3/g. It is interesting to make a direct comparison between the specific volume of ordinary and heavy water at the same temperatures and pressures. For this purpose there is plotted in Fig 2 the

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The Thermo-Dynamic Properties of Ordinary and Heavy Water

relationship between the specific volumes of the two materials as a function of temperature and pressure. The curves are based on the authors' previously published experimental data. It will be seen that the ratio of the specific volumes does not remain constant. It varies considerably, depending on the conditions at any given temperature. The change in this ratio is the greater the nearer the pressure is to the critical value. As the temperature is increased the pressure that corresponds to the minimum value of the ratio is displaced upwards. Interesting results are observed on comparing the isochores of heavy and ordinary water in the p-t diagram in Fig 3. The figures therein denote the values of the specific volumes for the corresponding isochores of ordinary water. The diagram indicates that the character of the isochores of ordinary and heavy water are quite analogous, both in the steam and the liquid phases. Analysis of the p-t diagram clearly

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SOV/96-59-12-14/20

The Thermo-Dynamic Properties of Ordinary and Heavy Water

demonstrates the similarity between the changes in the thermal properties of ordinary and heavy water. There are 3 figures and 5 references, 2 of which are Soviet, 2 German and 1 English.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Institute)

4

Card 4/4

HELINSKIY, Semen Yakovlevich; VUKALOVICH, M.P., red.; KIRILLIN, V.A., red.; KOMAROV, L.P., red.; MEYKLER, M.V., red.; TYURIN, P.Ya., red.; SKVORTSOV, A.A., red.; LARIONOV, G.Ye., tekhn.red.

[Heat and electric power plants and heating from central stations] Teplofikatsiia i teploelektrotsentrali. Moskva, Gos.energ.izd-vo, 1960. 86 p. (Biblioteka teplotekhnika, no.4). (MIRA 13:9)
(Heating from central stations)
(Electric power plants)

SUSHKOV, Vyacheslav Vladimirovich, prof.; KIRILLIN, V.A., red.; VORONIN, K.P., tekhn.red.

[Technical thermodynamics] Tekhnicheskaia termodinamika. Izd.6., perer. Pod red. V.A.Kirillina. Moskva, Gos.energ. izd-vo, 1960. 375 p. (MIRA 13:6)

1. Chlen-korrespondent AN SSSR (for Kirillin).
(Thermodynamics)

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S/024/60/000/02/007/031
E194/E155

AUTHORS: Kirillin, V.A., and Sheyndlin, A.Ye. (Moscow)

TITLE: An Experimental Investigation of the Thermodynamic Properties of Water and Steam at High Temperature and Pressure

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, Nr 2, pp 44-53 (USSR)

ABSTRACT: As a rule, foreign work on the thermodynamic properties of steam and water has not been carried out at pressures greater than 300 kg/cm^2 or temperatures over 550 °C. Similar experimental and theoretical work was also carried out in the Soviet Union in the years 1937-1950, mainly at the All-Union Thermo-Technical Institute and the Moscow Power Institute. There is, however, an increasing demand for information about steam and water at still higher temperatures and pressures. In recent years the Moscow Power Institute has accordingly begun, and is successfully undertaking, new work on the integrated experimental investigation of the thermodynamic properties of water and steam at pressures of the order of 700-900 kg/cm^2 and temperatures of the order of

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An Experimental Investigation of the Thermodynamic Properties of Water and Steam at High Temperature and Pressure

650-700 °C. An important feature of the recent investigations is the combined study of both the thermal and caloric properties of water and steam, so that the data form a reliable basis for formulating tables of their thermodynamic properties. At the Moscow Power Institute, experimental investigations into the thermal properties have been carried out by V.A. Kirillin's procedure, which has been described in several articles. A schematic diagram of the equipment is given in Fig 1, accompanied by a fairly detailed description of the apparatus and experimental procedure. A diagram of the high-pressure differential manometer is shown in Fig 2. The experimental procedure, though relatively simple, ensures high accuracy and the maximum error is 0.2-0.25%. Extensive experimental material has been obtained at conditions up to 952.9 kg/cm^2 and 650 °C. Recently the apparatus has also been used to investigate the specific volume of heavy water and its steam at pressures of 70-500 kg/cm^2 and temperatures of 250-500 °C; the work

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An Experimental Investigation of the Thermodynamic Properties of Water and Steam at High Temperature and Pressure

was described at the Geneva Conference on the Peaceful Uses of Atomic Energy in 1958. Investigation of the caloric properties of water and steam is then considered. The experimental equipment arranged to determine the specific heat at constant pressure is sketched diagrammatically in Fig 3 and the operating procedure is explained in considerable detail. The flow calorimetry procedure that is used is particularly described. With this procedure the calorimeters have very small heat losses, obviating the usual complicated auxiliary equipment which these necessitate. The experimental equipment is very easy to set up and operate, and is readily changed from one condition to another. The total duration of a calorimetric test, that is the time between successive determinations, is about 20-25 minutes. With this new experimental procedure the maximum error in determining the specific heat at constant pressure is of the order of 2%. Considerable experimental data on the specific heat at constant pressure has been obtained and published. On the basis of the extensive experimental

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material obtained in the Moscow Power Institute and the results of other investigations it has been possible to analyse and compare recent experimental data on the thermal and caloric properties of steam and water. This work is of particular importance in drawing up international sketon tables for water and steam. Tables of reference values of specific volume and specific heat at constant pressure of water and steam have now been worked out for a wide range of pressures and temperatures. Very complete data has been obtained at super-critical conditions. As is known, as the critical point is approached the specific heat at constant pressure increases, particularly, in the vapour phase. This increase makes a considerable contribution to the enthalpy of steam and accordingly knowledge of this specific heat at conditions near to the boundary curve is very important. The specific heat at constant pressure of dry saturated steam was determined up to a temperature of 340 °C by using the following four known

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An Experimental Investigation of the Thermodynamic Properties of Water and Steam at High Temperature and Pressure

values: the specific heat at constant pressure for the liquid; the latent heat of vapourisation; the relationship between the pressure and temperature of dry saturated steam; and the fairly well known thermal properties of steam near the boundary curve. The experience accumulated will be of value not only directly in providing information about the properties of water and steam but also in studying other important working substances.

Card 5/5

There are 4 figures and 20 Soviet references.

SUBMITTED: December 10, 1959

4

VUKALOVICH, M.P., doktor tekhn.nauk; KIRILLIN, V.A.

Development of thermal power engineering in the U.S.S.R. and the problems of thermodynamics. Teploenergetika 7 no.7: 3-4 Jl '60. (MIRA 13:7)

1. Chlen-korrespondent AN SSSR (for Kirillin)
(Power engineering) (Thermodynamics)

KIRILLIN, V.A.

Results of the July Plenum of the Central Committee of the CPSU and tasks of power engineers. Teploenergetika 7 no.9: 3-5 S '60. (MIRA 14:9)

1. Chlen-korrespondent AN SSSR.
(Power engineering)

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B004/B056

AUTHORS: Kirillin, V. A., Corresponding Member AS USSR, Sheyndlin, A. Ye., and Chekhovskoy, V. Ya.

TITLE: The Experimental Determination of the Enthalpy of Corundum (Al_2O_3) at Temperatures of From 500 to 2000°C

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 1, pp. 125-128

TEXT: It was the aim of the present paper to check the data for the enthalpy of corundum, which was obtained at the Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute) and by other research workers. The method of mixing in a massive metal calorimeter was applied, which was electrically heated by means of a TBB-2 (TVV-2)-type furnace. The authors describe the calibration of the calorimeter, the determination of its calorific value, and of the function $t = f(\tau)$ (τ = temperature of the heating period). The following was found on this occasion: 1) Experiments with a different course taken by the temperature

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The Experimental Determination of the Enthalpy of Corundum (Al_2O_3) at Temperatures of From 500 to 2000°C

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curve in the main period were in agreement within the range of calibration precision. 2) The heat exchange in the calorimeter did not depend on the direction of the heat flow. The validity of the cooling equation, by means of which the heat exchange δt was calculated, was within the temperature interval $(t - t_c) \leqslant 5 - 6°C$ (t_c = convergence temperature). 3) The readings of the outside- and inside thermometer did not deviate from each other by more than ±0.1%. The temperature of the corundum samples was measured up to 1318°C by means of Pt-PtRh-thermocouples (maximum measuring error ±0.5%), above this temperature by means of an optical pyrometer (maximum measuring error ±0.9%), which was calibrated at the Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Bureau of Standards, Measures, and Measuring Instruments). The measurements were carried out between 498 and 1993°C. The results of measurements are shown in Fig. 1 and are compared with the data obtained by the Moscow Power Engineering Institute and those obtained by other research workers. The maximum deviations were ±1%. There are 1 figure and 13 references,

Card ~~2/3~~ 2/2 Submitted Aug 1960

MEYKLYAR, Mikhail Vladimirovich; VUKALOVICH, M.P., red.; KIRILLIN, V.A., red.; KOMAROV, L.P., red.; TYURIN, P.Ya., red.; TROYANSKIY, Ye.A., red.; BORUNOV, N.I., tekhn. red.

[Engineering performance of the metal of a steam boiler] Kak rabotaet metall parovogo kotla. Moskva, Gos. energ. izd-vo, 1961. 93 p. (Biblioteka teplotekhnika, no.8) (MIRA 14:8)
(Boilers) (Metals)

S/170/61/004/002/001/018
B019/B060

AUTHORS: Kirillin, V. A., Sheyndlin, A. Ye., Chekhovskoy, V. Ya.

TITLE: Experimental Determination of the Enthalpy of Corundum (Al_2O_3) at Temperatures of 500° to 2000°C

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1961, Vol. 4, No. 2, pp. 3-17

TEXT: A description is given of an experimental arrangement for measuring the enthalpy and the specific heat of substances by the mixing method. The system basically consists of a 50-kw furnace, heated by a tungsten heating conductor, and the calorimeter proper. The furnace stood above the calorimeter. The latter consisted of a copper block 118-mm in diameter and 179 mm high. Furnace and calorimeter formed a hermetically sealed system, which was either filled with air (10^{-3} mm Hg) or with argon (1.05 ata). The copper block had a bore inside and on the outside was sealed off by extra-bright finished Al sheet. The system was placed in a water thermostat. The temperature in the calorimeter was measured by a resistance thermometer, and that in the furnace by an optical pyrometer (at temperatures

up to 1318°C with a Pt-PtRh thermocouple). The measuring instruments were controlled at the VNII Komiteta standartov mer i izmeritel'nykh priborov (VNII of the Committee on Standards, Measures, and Measuring Instruments). The test piece may be allowed to drop from the furnace into the calorimeter, and the heat content of the test piece is calculated from the temperature changes of the Cu block. The calibration of the system is discussed in detail. In this calibration, the various forms of heating curves of the test pieces were not found to have any effect upon the experimental results. Anhydrous aluminum oxide (α-modification) was the initial material for the preparation of corundum. The test pieces were placed in an ampoule, whose heat capacity was known and which was heated with the test piece in the furnace. The ampoule was designed in a way as to fit precisely into the tapered bore of the Cu block. The enthalpy of 0°C up to a test piece temperature of t_a was calculated by the following formula:

$$i_{0°C}^{t_a} = \frac{1}{G}(H\Delta R + q_l - q_w) + i_{0°C}^{t'_k}$$, where $H\Delta R$ is the heat introduced

through the test piece into the calorimeter, G is the weight of the test piece, q_1 is the heat loss of the test piece while falling, and $i_{0°C}^{t'_k}$ is the test-piece enthalpy from 0°C up to temperature t'_k of the calorimeter system after heat compensation. Results are given in Table 1. A comparison with data supplied by other authors gave satisfactory agreement. E. N. Rodigina, K. Z. Gomel'skiy, N. B. Vargaftnik, and O. N. Oleshchuk are mentioned, and reference is made to work carried out at the filial Vsesoyuznogo instituta metrologii (Branch of the All-Union Institute of Metrology) in Sverdlovsk. There are 5 figures, 1 table, and 20 references: 11 Soviet, 1 German, and 1 US.

ASSOCIATION: Energeticheskiy institut, g.Moskva (Institute of Power Engineering, Moscow)

SUBMITTED: August 19, 1960

KIRILLIN, V.A.; VUKALOVICH, M.P., doktor tekhn.nauk

Future developments in power engineering and new problems in the physics of heat. Teploenergetika 8 no.6:3-5 Je '61.
(MIRA 14:10)

1. Chlen-korrespondent AN SSSR (for Kirillin).
(Electric power) (Thermodynamics)

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S/020/61/139/003/022/025
B127/B206

AUTHORS: Kirillin, V. A., Corresponding Member AS USSR, Sheyndlin, A. Ye., and Chekhovskoy, V. Ya.

TITLE: Experimental determination of the enthalpy of molybdenum at 700-2337°C

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 3, 1961, 645-647

TEXT: The enthalpy of molybdenum having been studied only up to 1500°C, the authors continue the investigation by studying the enthalpy at high temperatures with the mixing method, applying a massive calorimeter. Tungsten heaters were used for generating the temperature. The experimental plant was evacuated to a pressure of 10^{-3} mm Hg, or filled with argon to 1.05 atm absolute pressure. The temperature was measured by platinum resistance thermometers connected to a ПМС-48 (PMS-48) potentiometer and an М21/4 (M21/4) mirror galvanometer. Temperature fluctuations were only $\pm$0.001°C. The specimens were taken from molybdenum ingots produced by powder metallurgy, the ingots containing a

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maximum of 0.04-0.05 % impurities; they had the shape of a truncated cone, the surface of which was carefully polished. Temperatures up to 1327°C were measured by platinum-rhodium-platinum thermocouples, the hot junction of which was inside the specimen. Higher temperatures were measured by a pyrometer, in which case a cavity was made in the specimen in order to produce an ideally black body. The specimens were suspended in a vacuum furnace by means of a graphite ring to prevent sticking at higher temperatures. For thermal stabilization, the specimens were tempered in the vacuum furnace at 2050°C. They were heated for 3 hr, and subsequently cooled for 1.5 hr. The experiments were repeated after this thermal stabilization. Their results are tabulated. One calorie was assumed to equal 4.1840 abs.joules. The maximum error was no more than ± 0.4% for temperature measurement by thermocouple, and ± 0.9% by pyrometer at 1300-2000°C, and ± 1.2% at 2000-2400°C. There are 1 table and 9 references: 4 Soviet-bloc and 5 non-Soviet-bloc. The two references to English-language publications read as follows: T. A. Redfield, J. H. Hill, United State Atomic Energy Commission, ORNL - 1087; Sept. 24, 1951; A. G. Worthyng, Phys. Rev., 28, 195 (1926).

Card 2/3 Lab High Temperatures, AS USSR

ZENGER-BREDT, I.[Sanger-Bredt, I.]; SYCHEV, V.V.[translator]; ASINOVSKIY, E.I.[translator]; KIRILLIN, V.A., red.; SHEYNDLIN, A.Ye., doktor tekhn. nauk, prof., red.; YAKIMOVICH, M.G., red.; KARPOV, I.I., tekhn. red.; KOROTEYEVA, Yu.I., tekhn. red.

[Some properties of hydrogen and water as possible working fluids for rockets]Nekotorye svoistva vodoroda i vodianogo para - vozmozhnykh rabochikh tel raket. Moskva, Izd-vo inostr. lit-ry, 1962. 98 p. Translated from the English and the German. (MIRA 16:1)

1. Chlen-korrespondent Akademii nauk SSSR (for Kirillin).
(Rockets (Aeronautics))

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S/096/62/000/002/004/008
E111/E414

18.1152

AUTHORS: Kirillin, V.A., Corresponding Member AS USSR,
Sheyndlin, A.Ye., Doctor of Technical Sciences,
Chekhovskoy, V.Ya., Candidate of Technical Sciences

TITLE: Thermodynamic properties of tungsten in the temperature range 0 to 2400°C

PERIODICAL: Teploenergetika, no.2, 1962, 63-66

TEXT: The authors describe their experimental determination of the enthalpy of tungsten at 2000 to 2340°C. They used the method of mixtures with a massive copper calorimeter with a constant temperature jacket. The apparatus and method were described by the authors in previous papers (Ref.5: DAN SSSR, v.135, no.1,1960; Ref.6: Inzhenergo-fizicheskiy zhurnal, v.4, no.2, 1951, 3). Tungsten heaters enabled higher specimen purity to be maintained than with graphite heaters. Special measures were taken to prevent sticking of the specimens at temperatures above 2000°C. Specimen temperature was measured with a disappearing-filament optical pyrometer (estimated error ± 0.7%). The surface of specimens was kept polished throughout the series of experiments

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and they were weighed before and after each determination. Experiments were performed in both argon and vacuum. From the present and previous (Ref.3: Inzhenergo-fizicheskiy zhurnal, 1962) work the authors worked out empirical equations for the enthalpy and specific heat of tungsten. The results are:

enthalpy: $i_T - i_{273.15} = 5.556T + 4.935 \times 10^{-4}T^2 + 14.9 \times 10^{-9}T^3 - 1554.8$ cal/g atom (6)

specific heat: $\mu c_p = 5.556 + 9.87 \times 10^{-4}T + 4.47 \times 10^{-3}T^2$ cal/g atom x degree (7)

enthropy: $s_T - s_{273.15} = 12.793 \lg T + 9.87 \times 10^{-4}T + 2.24 \times 10^{-8}T^2 - 31.440$ cal/g atom x degree (9)

From Eq.(6), (7) and (9) the smoothed values were calculated (Table 2). The authors estimate the random error in their

entropy determination as ± 0.6% at 350 to 1200°C, ± 0.9% for 1000 to 2000°C and ± 1.2% for 2000 to 2400°C. From their discussion of published values the authors conclude that there is generally satisfactory agreement. There are 1 figure, 3 tables and 14 references: 5 Soviet-bloc and 9 non-Soviet-bloc. The three references to English language publications read as follows: Ref.10: H.L.Bronson, H.M.Chisholm and S.M.Dockerty. Canad. Journ. Ref., v.8, no.3, 1933, 282; Ref.12: K.K.Kelley. US Bureau of Mines, Bull. 476, 1949; Ref.13: A.G.Worthing. Phys. Rev., v.12, 1918, 199.

Card 3/4

S/020/62/142/006/016/019
B101/B144

18.11.1✓

AUTHORS: Kirillin, V. A., Corresponding Member AS USSR, Sheyndlin, A. Ye., and Chekhovskoy, V. Ya.

TITLE: Enthalpy and specific heat of tungsten between 0 and 2400°C

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 6, 1962, 1323-1326

TEXT: The determination of enthalpy and specific heat of tungsten was extended up to 2340°C. The specimen obtained by powder metallurgy techniques was prevented from being soiled by using a furnace with tungsten, not graphite, heater. The impurity content of the specimen was less than 0.05%. The measurements were made in vacuum (10^{-2}-10^{-3} mm Hg) or in argon atmosphere. A cavity bored in the specimen was covered by a tungsten disk with a bore of 2.3 mm in diameter, and a pyrometer was used for the exact temperature measurement (absolute blackbody) between 2000 and 2400°C. The following empirical equations were found for the temperature range 0-2400°C: $i_t - i_{0°C} = 0.03170t + 2.75\cdot10^{-6}t^2 + 8.1\cdot10^{-11}t^3$ (1); $c_p = 0.03170 + 5.50\cdot10^{-6}t + 2.43\cdot10^{-10}t^2$;

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Card 1/2

KIRILLIN, V.A.; SHEYNDLIN, A.Ye.; CHEKHOVSKOY, V.Ya.; PETROV, V.A.

Experimental study of the enthalpy of tungsten in the range of temperatures from 2400 to 2820°C. Dokl.AN SSSR 144 no.2:390-391 My '62. (MIRA 15:5)

1. Laboratoriya vysokikh temperatur Moskovskogo energeticheskogo instituta. 2. Chlen-korrespondent AN SSSR (for Kirillin).
(Tungsten) (Enthalpy)

KAZAVCHINSKIY, Ya.Z., prof.; KESSEL'MAN, P.M., kand. tekhn. nauk; KIRILLIN, V.A., akademik; RIVKIN, S.L., kand. tekhn. nauk; SYCHEV, V.V., kand. tekhn. nauk; TIMROT, D.L., prof.; SHEYNDLIN, A.Ye., prof.; SHPIL'RAYN, E.E., dots.; BUL'DYAYEV, N.A., tekhn. red.

[Heavy water; its thermophysical properties] Tiazhelaia voda; Teplofizicheskie svoistva. Moskva, Gosenergoizdat, 1963. 255 p. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur pri Moskovskom energeticheskom institute (for Kirillin, Sychev, Timrot, Sheyndlin, Shpil'rayn). 2. Vsesoyuznyy nauchno-issledovatel'skiy teplotekhnicheskiy institut imeni F.E. Dzerzhinskogo (for Rivkin). 3. Odesskiy institut inzhenerov morskogo flota (for Kazavchinskiy). 4. Odesskiy tekhnologicheskiy institut (for Kessel'man).

KIRILLIN, Vladimir Alekseyevich; SHEYNDLIN, Aleksandr Yefimovich; SYCHEV, V.V., red.; BUL'DYAYEV, N.A., tekhn. red.

[Studies of the thermodynamic properties of substances] Issledovaniia termodinamicheskikh svoistv veshchestv. Moskva, Gosenergoizdat, 1963. 559 p. (MIRA 16:5)
(Matter--Thermodynamic properties)

KIRILLIN, V. A., SHEYNDLIN, A. YE., and CHEKHOVSKOY, V. Ya.,

"Ental'piya i Teploemkost' Nekotorykh Tverdikh Veshchestv pri Vec'ma Vysokikh Temperaturakh. (Enthalpy and Heat Capacity of Some Solid Substances at Very High Temperatures.)"

report presented at the Intl. Symposium on High Temperature Technology held at Asilomar, California, 8-11 Sep 63

KIRILLIN, V.A., akademik

Research in the field of high-temperature thermophysics. Teplofiz. vys. temp. 1 no.1:3-7 Jl-Ag '63. (MIRA 16:10)

KIRILLIN, V.A., akademik

Problems of high-temperature physics. Vest.AN SSSR 33 no.2: 38-43 F '63. (MIRA 16:2)

(High temperatures)

KIRILLIN, V.A.; SHEYNDLIN, A.Ye.; CHEKHOVSKOY, V.Ya.; PETROV, V.A.

Thermodynamic properties of tungsten in the temperature range 0 - 3500°K. Zhur.fiz.khim. 37 no.10:2249-2257 O '63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur pri Moskovskom energeticheskom institute.

ARTSIMOVICH, L.A., akademik; DOLLEZHAL', N.A., akademik; KIRILLIN, V.A., akad.; MILLIONSHCHIKOV, M.D., akademik; POPKOV, V.I.; FRUMKIN, A.N., akademik

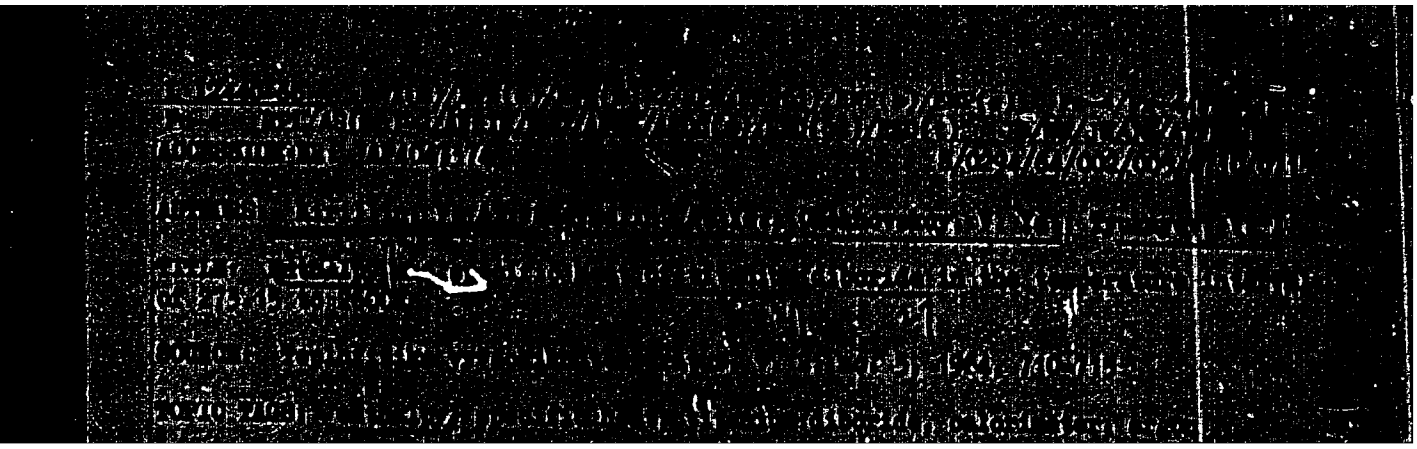
[Power engineering of the future; the second discussion] Energetika budushchego; beseda vtoraia. [By] L.A. Artsimovich i dr. Moskva, Izd-vo "Znanie," 1964. 54 p. (Novoe v zhizni, nauke, tekhnike. Seriia IX: Fizika, matematika, astronomiia, no.11) (MIRA 17:6)

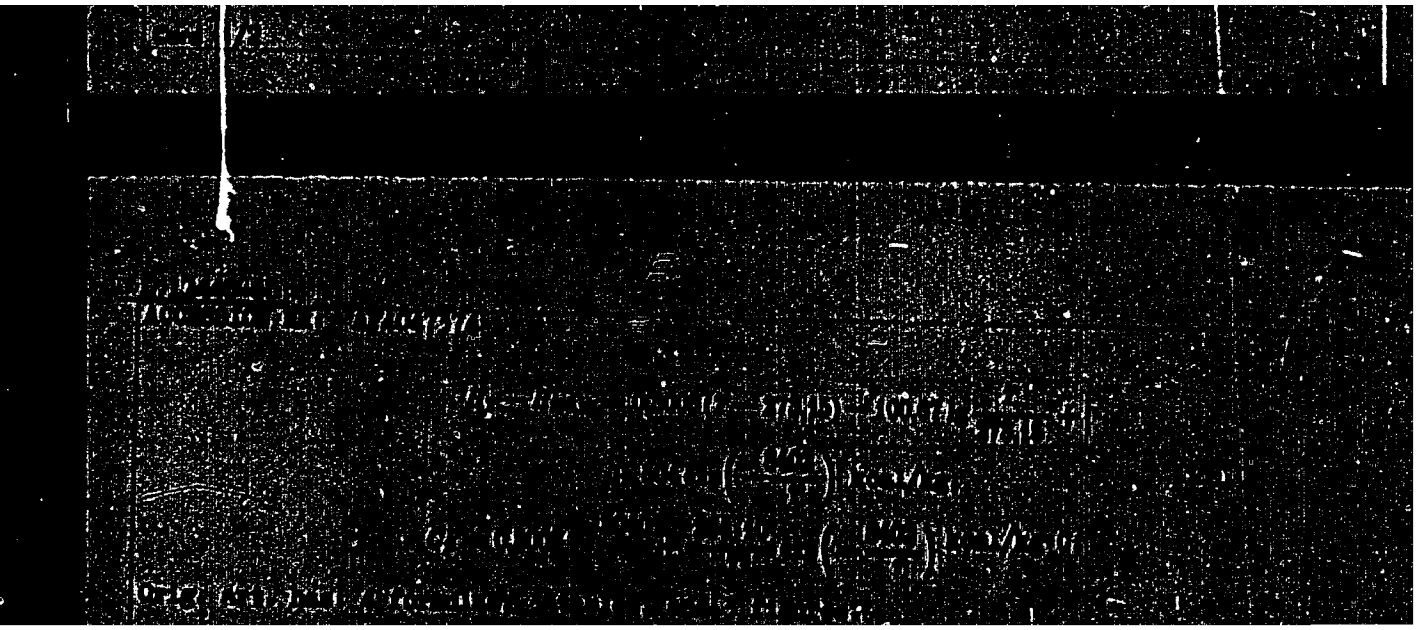
1. Chlen-korrespondent AN SSSR (for Popkov).

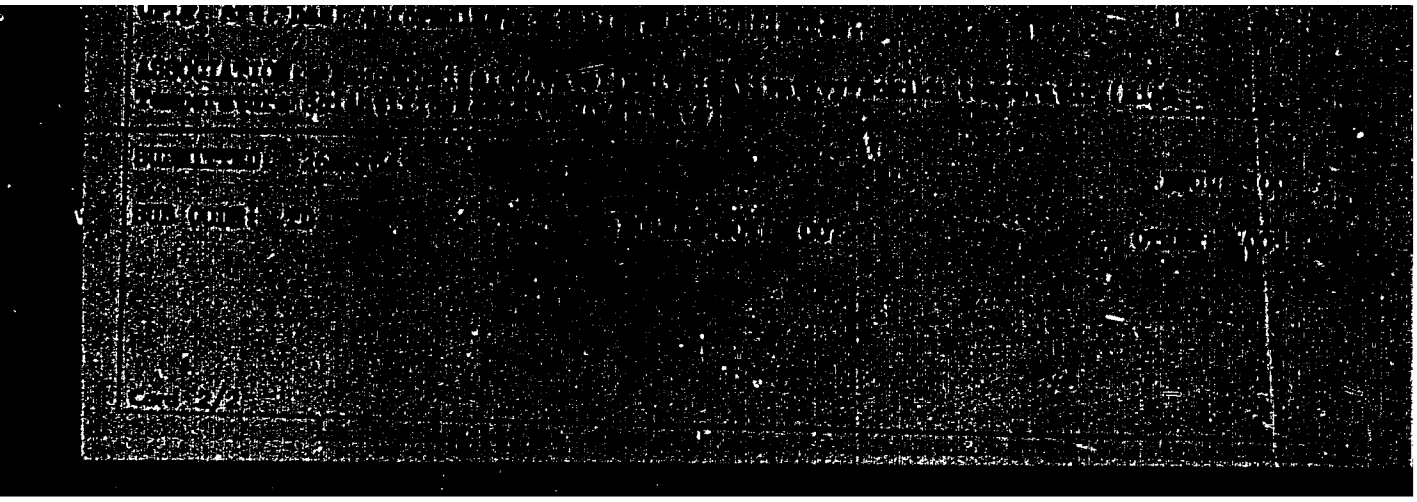
KIRILLIN, V.A.; SHEYNDLIN, A.Ye.; CHEKHOVSKOY, V.Ya.

Enthalpy and heat capacity of silicon carbide containing 12% of free carbon in the temperature range 1100° - 2850°K. Teplofiz. vys. temp. 2 no.1:9-15 Ja-F '64. (MIRA 17:3)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur.







APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000722620014-7"

KELER, V.R., otv. red.; MILLIONSHCHIKOV, M.D., akademik, red.; BLOKHIN, N.N., red.; BLOKHINTSEV, D.I., red.; GNEDENKO, B.V., akademik, red.; ZAYCHIKOV, V.N., red.; KELDYSH, M.V., akademik, red.; KIRILLIN, V.A., akademik, red.; KORTUNOV, V.V., red.; MONIN, Andrey Sergeyevich, prof., doktor fiz.-matem. nauk, red. (1921); NESMEYANOV, A.N., akademik, red.; PARIN, V.V., red.; REBINDER, P.A., akademik, red.; SEMENOV, N.N., akademik, red.; FOK, V.A., akademik, red.; FRANTSOV, G.P., akademik, red.; ENGEL'GARDT, V.A., akademik, red.; KREMNEVA, G., red.; BALASHOVA, A., red.; BERG, A.I., akademik, red.

[Science and mankind, 1964; simple and precise information about the principal developments in world science] Nauka i chelovechestvo, 1964.; dostupno i tochno o glavnom v mirovoi nauke. Moskva, Izd-vo "Znanie," 1964. 424 p. (MIRA 18:1)

1. Deystvitel'nyy chlen AMN SSSR (for Blokhin, Parin). 2. Chlen-korrespondent AN SSSR (for Blokhintsev). 3. Akademiya nauk SSSR Ukr.SSR (for Gnedenko).

KIRILLIN, V. A.; SHEYNDLIN, A. Ye.; CHEKHOVSKIY, V. Ya.; ZHUKOVA, I. A.

"Thermodynamic properties of niobium in the temperature range from 0°K to the melting point, 2740°K."

report submitted for 3rd Symp on Thermophysical Properties, Purdue Univ, Lafayette, Ind., 22-25 Mar 65.

CHEKHOVSKOY, V. Ya.; KIRILLIN, V. A.; SHEYNDLIN, A. Ye.; ZHUKOVA, I. A.

"Thermodynamic properties of niobium in the temperature range from 0°K to the melting point, 2740°K."

paper accepted for presentation at 3rd Symp on Thermophysical Properties, Lafayette, Ind, 22-26 Mar 65.

Inst of High Temperatures, Moscow.

IARIN, I.A.; KIRILLIN, V.A.

Economic efficiency of the use of plastics in the manufacture of sanitary engineering wares. Plast. massy no.8:45-47 '65. (MIRA 18:9)

L 8991-66 EWT(l)/EWP(e)/EWT(m)/ETC/EPF(n)-2/EWG(m)/EWP(t)/EWP(k)/EWP(z)/EWP(b)
ACC NR: AP5016695 EWA(h)/ETC(m) SOURCE CODE: UR/0294/65/003/003/0395/0400
IJP(c) JD/WW/JW/JG

AUTHOR: Kirillin, V. A.; Sheyndlin, A. Ye.; Chekhovskoy, V. Ya.; Zhukova, I. A.

ORG: Scientific Research Institute of High Temperatures (Nauchno-issledovatel'skiy institut vysokikh temperatur)

TITLE: Experimental determination of the enthalpy of niobium in the 600 to 2600°K temperature range

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 3, 1965, 395-400

TOPIC TAGS: enthalpy, high temperature metal, powder metallurgy, heat capacity

ABSTRACT: The method of mixing is used to determine the enthalpy of niobium in the temperature range of 582°K to 2587°K. The calorimeter and oven used in the experiment were placed in a vacuum chamber and it is shown that results obtained at 10^{-2} to 10^{-3} mm Hg pressure agree with those obtained in an argon atmosphere. The measurements were made on samples produced by powder metallurgy and electric arc methods. No difference in the results was found. A detailed description of measurements which were necessary to assure minimum error is presented. The effect of vacancies at high temperatures was observed and its effect on the accuracy is considered. The results are presented in graphical and table form. In addition to the enthalpy measurement, the heat capacity was determined in a temperature range 273.15°K to 2740°K. Orig. art.

Card 1/2 UDC: 536.722:546.882

L 8991-66
ACC NR: AP5016695

has: 1 figure, 4 tables, 2 formulas.

SUB CODE: 11,20/ SUBM DATE: 030ct64/ ORIG REF: 010/ OTH REF: 006

Card 2/2

(A) L 11902-66 EWT(l)/EWT(m)/EWP(w)/ETC(F)/EPF(n)-2/EWG(m)/T/EWP(t)/
ACC NR AP6001909 EWP(b)/ETC(m) UR/0294/65/003/006/0860/0865
LJP(c) JD/JW/JG

AUTHOR: Kirillin, V.A.; Sheyndlin, A.Ye.; Chekhovskoy, V.Ya.; Zhukova, I.A.

ORG: High Temperature Research Institute (Nauchno-issledovatel'skiy institut vysokikh temperatur)

TITLE: Thermodynamic properties of niobium in the temperature interval

SOURCE: Teplofizika vysokikh temperatur, v.3, no.6, 1965, 860-865

TOPIC TAGS: niobium, thermodynamic property, enthalpy, entropy

ABSTRACT: The enthalpy and entropy of niobium in the temperature interval 0-273°K were calculated on the basis of averaged values of the actual heat capacity, using the following equations:

$$H_T - H_0 = \int_0^T c_p dT = \sum_{i=0}^{n} [1/2(c_{p,i+1} + c_{p,i})(T_{i+1} - T_i) + \Delta H_{i+1}], \quad (1)$$

$$S_T - S_0 = \int_0^{\ln T} c_p d(\ln T) = \sum_{i=0}^{n} [1/2(c_{p,i+1} + c_{p,i})(\ln T_{i+1} - \ln T_i) + \Delta S_{i+1}]. \quad (2)$$

 UDC: 546.882:536.63+536.722+536.75+536.77

Here H_0 and S_0 are the enthalpy and entropy at 0°K. The following equations were used for calculation of the enthalpy and entropy in the temperature interval from 273.15 to 2740°K:

$$H_T - H_0 = 5{,}499T + 6{,}328 \cdot 10^{-4} T^2 + 1554 \cdot 10^3 \exp\left(-\frac{19{,}53 \cdot 10^3}{T}\right) - 440{,}7 \text{ кал/г-ат}, \quad (5)$$

$$S_T - S_0 = 12{,}662 \lg T + 12{,}656 \cdot 10^{-4} T + 69{,}35\left(1 + \frac{19{,}53 \cdot 10^3}{T}\right)\exp\left(-\frac{19{,}53 \cdot 10^3}{T}\right) - 22{,}905. \quad (6)$$

The results of the calculations are presented in a table and in empirical equations. Orig. art. has: 7 formulas, 3 figures, and 1 table.

SUB CODE: 11,20/ SUBM DATE: 05Nov64/ ORIG REF: 005/ OTH REF: 012

Card 2/2

L 34857-66 JKT

ACC NR: AP6014075 SOURCE CODE: UR/0294/66/004/002/0267/0273

AUTHOR: Kirillin, V. A.; Rossiyevskiy, G. I.; Styrikovich, M. A.; Sheyndlin, A. Ye. 38 B

ORG: Scientific Research Institute of High Temperatures (Nauchno-issledovatel'skiy institut vysokikh temperatur); Moscow Engineering-Economics Institute im. S. Ordzhonikidze (Moskovskiy inzhenerno-ekonomicheskiy institut)

TITLE: Prospective efficiency of electric power stations with high-capacity open-type MHD generators [Reported at the Royal Society meeting of 4 Nov 65, England]

SOURCE: Teplofizika vysokikh temperatur, v. 4, no. 2, 1966, 267-273

TOPIC TAGS: MHD generator, electric power plant

ABSTRACT: The results are reported of an estimation of the thermal efficiency of MHD power plants; 500-Mw generators and high-temperature heating of

Card 1/2 UDC: 621.313.12:5384

ACC NR: AP6014075

ordinary or oxygen-enriched air are assumed. The gas temperatures were assumed: before the channel: 2500, 2600, 2700C; after the channel: 2250, 2100C. Initial steam parameters for turbines, 240 atm, 580C. These conclusions are offered: (1) With ordinary-air preheating to 1500—2000C, the power-plant efficiency could reach 50—60% which considerably exceeds that of any other type of power plant; (2) The most important problem for materialization of such power plants is the constructing of magnetic systems with an induction of 4—6 web/m^2; (3) Methods are needed for obtaining high temperatures of the combustion products with limited air preheating. The flue loss of the ionizing agent (K_2CO_3) can appreciably offset the MHD-plant savings if the fuel is cheap; hence, the MHD plants seem to be promising for the areas of high- or medium-price fuels. Orig. art. has: 3 figures, 2 formulas, and 2 tables.

SUB CODE: 10 / SUBM DATE: 01Dec65

MESHCHERYAKOV, L.I., kand. tekhn. nauk; KIRILLIN, V.I., inzh.

Construction and testing of a bridge with coreless span structures.
Avt. dor. 28 no.9:15 S '65. (MIRA 18:10)

DMITRIYEV, A.P.; GLOTOV, B.A.; KIRILLIN, V.I.

Improving the durability of wooden bridges. Avt. dor. 28 no.9:12,22,26 S '65. (MIRA 18:10)

KIRILLIN, Vladimir Ivanovich; KUZNETSOV, P.V., red.; OKRASIMOVA, Ye.S., tekhn.red.

[Analyzing the work rhythm of an industrial enterprise] Analiz ritmichnosti raboty promyshlennogo predpriiatiia. Moskva, Izd-vo ekon.lit-ry, 1961. 50 p. (MIRA 14:12)
(Industrial management)

POLIVANOV, A.A., vetvrach; SOMINSKIY, Z.F., dotsent; KIRILLIN, V.M., glavvetvrach

Some materials on the epizootology and clinical aspects of Aujesky's disease in cattle. Veterinariia 36 no.4:29-31 Ap '59. (MIRA 12:7)

1.Zaveduyushchiy otdelom Ul'yanovskoy oblvetbaklaboratorii (for Polivanov). 2.Ul'yanovskiy sel'skokhozyaystvennyy institut (for Sominskiy). 3.Cherdaklinskiy rayon, Ul'yanovskaya oblast' (for Kirillin).

(Ul'yanovsk Province--Pseudorabies)

MIZERI, Aleksandr Aleksandrovich; KIRILLIN, V.M., retsenzent; AKSENOVA, I.I., red.; BATYREVA, G.G., tekhn. red.

[Use of metallic ceramics and capillary lubrication in the repair and modernization of textile machinery]Primenenie metallokeramiki i kapilliarnoi smazki pri remonte i modernizatsii tekstil'nogo oborudovaniia. Moskva, Rostekhizdat, 1962. 99 p. (MIRA 16:3)
(Textile machinery--Maintenance and repair)
(Ceramic metals) (Lubrication and lubricants)

KIRILLIN, V.Ye., elektromonter

Sketch of an excellent mechanic. Transp. stroi. 14 no.8:33-34
Ag '64. (MIRA 18:1)